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# TECHNICAL NOTES

## LAKE STATES FOREST EXPERIMENT STATION U.S. DEPARTMENT OF AGRICULTURE · · FOREST SERVICE

No. 604

### Current Timber Growth Estimates for the Lake States

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Forest Survey estimates show that annual net cubic-foot timber growth in the Lake States increased 38 percent between 1936 and 1956 (table 1).<sup>1/</sup> Sawtimber growth rose even more rapidly, expanding by 92 percent. Increased growth was associated with a general improvement in stocking and a high rate of ingrowth as more small trees reached merchantable size. This sizable increment occurred even though commercial forest area in the region declined by 1.2 million acres. More advances in total growth can be expected if planting continues to mount and mortality losses are reduced.

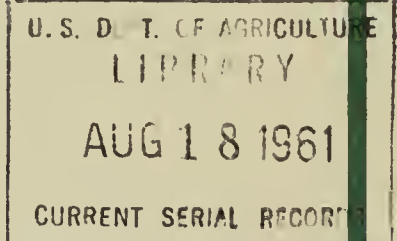
Table 1.--Estimated current annual growth of all growing stock (sawtimber plus cordwood) and of sawtimber in the Lake States, 1936 and 1956.

#### Growth of growing stock in million cubic feet

<u>Species Group</u>	<u>1936</u>	<u>1956</u>	<u>Percent increase</u>
Pine	88	105	+ 19
Other softwoods	120	196	+ 63
Northern hardwoods	106	135	+ 27
Aspen-cottonwood	301	352	+ 17
Other hardwoods	238	389	+ 63
All species	853	1,177	+ 38

#### Growth of sawtimber in million board feet (International 1/4" Rule)

Pine	258	407	+ 58
Other softwoods	213	441	+ 107
Northern hardwoods	253	324	+ 28
Aspen-cottonwood	178	487	+ 174
Other hardwoods	509	1,046	+ 106
All species	1,411	2,705	+ 92



Pine and aspen cubic-foot growth increased about half of the average for all species. In contrast other softwoods and other hardwoods species groups expanded increment by over 60 percent. In these groups balsam fir, red maple, elm, and the ashes were mainly responsible for the sizable rise in growth.

Increased growth of sawtimber is largely in species not commonly preferred for sawlogs. For example, while pine and northern hardwoods had increases well below the average for all species, aspen sawtimber growth nearly tripled. Sawtimber growth of other hardwoods doubled, primarily because of higher growth of elm, soft maple, and the oaks.

<sup>1/</sup> Although nominally dated 1956, the estimates in this paper were compiled from Forest Surveys completed in 1953 in Minnesota, 1957 in Michigan, and 1958 in Wisconsin. The 1936 estimates were adjusted to be comparable with the new estimates. The 1956 data supersede those presented in Technical Note No. 452, which were based on partial results of Forest Surveys in Wisconsin and Michigan and complete results in Minnesota.

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Table 2.--Current annual net timber growth in the Lake States, 1956

Species	Lake States	Minnesota	Wisconsin	Michigan
Growth of growing stock in million cubic feet				
White and red pine	45.6	15.1	11.9	18.6
Jack pine	59.9	15.1	12.1	32.7
Spruce	49.0	27.7	5.7	15.6
Balsam fir	77.7	37.7	10.4	29.6
Hemlock	9.4	-	2.6	6.8
Tamarack	22.0	13.3	2.8	5.9
Cedar	37.3	8.7	3.9	24.7
All softwoods	300.9	117.6	49.4	133.9
Sugar maple	78.9	5.9	22.2	50.8
Yellow birch	9.8	.3	3.6	5.9
Beech	5.2	-	.6	4.6
Basswood	41.0	13.2	14.1	13.7
Oak	120.5	28.6	45.5	46.4
Elm	56.9	11.7	14.1	31.1
Aspen	352.0	147.0	96.5	108.5
Paper birch	59.5	24.7	14.2	20.6
Soft maple	59.3	1.3	17.2	40.8
Ash	41.4	15.4	11.7	14.3
Other hardwoods	51.3	18.9	10.4	22.0
All hardwoods	875.8	267.0	250.1	358.7
All species	1,176.7	384.6	299.5	492.6
Growth as a percent of growing stock volume	4.6	5.3	3.8	4.6
Growth of sawtimber in million board feet (Int. 1/4" Rule)				
White and red pine	207.6	67.4	60.0	80.2
Jack pine	199.5	83.9	27.6	88.0
Spruce	111.3	57.6	10.6	43.1
Balsam fir	161.8	78.2	17.4	66.2
Hemlock	49.0	-	17.1	31.9
Tamarack	35.8	22.3	4.3	9.2
Cedar	82.5	19.3	13.9	49.3
All softwoods	847.5	328.7	150.9	367.9
Sugar maple	141.3	9.5	50.0	81.8
Yellow birch	27.8	1.2	11.5	15.1
Beech	26.8	-	3.0	23.8
Basswood	128.8	41.7	44.7	42.4
Oak	425.0	96.8	187.3	140.9
Elm	234.8	47.1	61.5	126.2
Aspen	486.7	170.4	169.7	146.6
Paper birch	67.2	23.7	16.9	26.6
Soft maple	113.7	.8	30.6	82.3
Ash	93.5	36.0	26.6	30.9
Other hardwoods	112.1	32.2	25.3	54.6
All hardwoods	1,857.7	459.4	627.1	771.2
All species	2,705.2	788.1	778.0	1,139.1
Growth as a percent of sawtimber volume	5.1	6.3	4.8	4.8